L0310450011 - Cook Co.
Fitz-Mar Landfill
ILD# 980902068
SF/HRS

Fritz Mar LF
Mini # 3

ESI

Site Team Evaluation Prioritization

Illinois Environmental Protection Agency

2200 Churchill Road
P. O. Box 19276
Springfield, IL 62794-9276

entered
DG
5/7/97

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SECTION 1

SITE BACKGROUND

1.1 INTRODUCTION

On September 29, 1995 the Illinois Environmental Protection Agency's Site Assessment Unit was tasked by Region V of the United States Environmental Protection Agency (U.S. EPA) to conduct a Site Team Evaluation Prioritization (STEP) of the Fitz-Mar Landfill (ILD# 980902068) in Cook County, Illinois. This investigation was conducted under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 40 CFR, 1980 as amended by the Superfund Amendments and Reauthorization Act (SARA) of 1986.

Fitz-Mar Landfill was placed on the Comprehensive Environmental Response, Compensation, and Liability Information System in February of 1984. This action was the result of a closure of the landfill conducted without a permit due to a dispute between the owner and the operator. The landfill began permitted operations in 1971 until Fitz-Mar, the most recent operator, closed the landfill in 1992. Historical data indicates that the site was being utilized for landfilling prior to 1971. The IEPA conducted a CERCLA Screening Site Inspection of the site in 1988 which documented the presence of volatile contamination in groundwater and on-site soils. Refer to the site history section of this report for more detailed information about site operations and past investigations.

1.2 SITE DESCRIPTION

The address given for the Fitz-Mar Landfill is 28th and East End Avenue in Chicago Heights, Illinois. Site topography is generally uneven with a large mound sloping off in all directions located in the center of the property clearly delineating the fill area. The total area of the property is roughly 45 acres of which 38.5 acres were used for landfilling operations. The area immediately surrounding the site is a mixture of commercial and industrial properties. A densely populated residential area is located approximately 500 feet west of the site. The Chicago Heights Refuse Depot, another inactive landfill, is located immediately north of the site across an access road which forms the northern border of the site. The landfill is bordered on the east by a ditch which was filled with water at the time of the reconnaissance. East End Avenue forms the border of the site to the west. An engineered drainage ditch borders the landfill to the south.

The legal description given for the Fitz-Mar Landfill is the Southwest 1/4 of Section 28, Township 35 North, Range 14 East of the Third Principle Meridian, Cook County. A four mile radius map of the area around the landfill can be found in Appendix A.

To reach the site travel east on State Route 30 to Chicago Heights. Take a right on Union Avenue heading south for approximately 1.5 miles. Take a left at the intersection of Union Avenue and Sauk Trail heading east. Continue eastbound on Sauk Trail for roughly a 0.5 miles and turn north on East End Avenue. The landfill is on the east side of East End Avenue.

1.3 SITE HISTORY

According to the IEPA Bureau of Land file the Fitz-Mar Landfill has been inactive since 1992 after having been ordered to discontinue operations by the IEPA. The City of Chicago Heights, the property owner, first applied for a permit in 1971 to utilize approximately 15.5 acres of the site for disposal of municipal waste. Historical data indicates that the property was used as a landfill prior to 1971 during which time the IEPA did not regulate or permit landfills nor were operators required to manifest wastes disposed of at the landfill. The landfill was operated by the City of Chicago Heights until 1974 at which time Nardi Wrecking Company took over the daily operations. From 1975 until 1977 Chicago Heights Refuse Depot operated the landfill. From 1977 until closure of the original 15.5 acres in 1980, Skyline Disposal was the operator.

In 1981 the City of Chicago Heights reapplied for a permit to conduct landfilling operations on 58.5 acres, which included the original 15.5 acres. In 1982 Fitz-Mar began operations at the site. Fitz-Mar was a partnership between Mr. Martin Wondaal and Mr. Charles Fitzpatrick. The partnership dissolved around 1988 at which time a court order was issued to Fitz-Mar to cease dumping in unpermitted areas of the site. Fitz-Mar continued operations until 1992 at which time Mr. Wondaal contends he was ordered to leave the site by the City of Chicago Heights. During this time, the "old" 15.5 acre fill area was excavated and reworked into the "new" fill area. According to the environmental consultant currently working with the City of Chicago Heights to properly close the landfill, the total fill area is 38.5 acres.

Wastes know to have been accepted at the landfill include municipal refuse, construction debris, industrial waste, and wastewater treatment sludge. The property is still owned by the City of Chicago Heights as it was throughout its operational history. Hazardous wastes were allegedly disposed of at the landfill, however, there is no documentation available to substantiate these allegations.

1.4 APPLICABILITY OF OTHER STATUTES

This section addresses any other EPA programs that may be associated with the landfill. The landfill was permitted by the IEPA's Solid Waste Management Unit and is attempting to gain approval to conduct a proper closure. Given the nature of operations it is unlikely that the site was or is subject to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), the Atomic Energy Act (AEA), or the Uranium Mill Tailings Radiation Control Act (UMTRCA).

SECTION 2

SITE TEAM EVALUATION PRIORITIZATION ACTIVITIES

2.1 RECONNAISSANCE INSPECTION

A site reconnaissance of the Fitz-Mar Landfill was conducted on June 14, 1996. Access to the property was obtained via a letter to Mr. Al Marconi, engineer for the City of Chicago Heights. Mr. Marconi indicated that he would be present for portions of the reconnaissance and sampling event. Mr. Paul Aronson, an environmental consultant contracted by the City of Chicago Heights, was also present during the recon and sampling event.

Site topography is generally uneven with a large mounded section occupying the center of the fill area. This mounded area slopes off at steep grades in all directions. Some portions of the landfill have good vegetative cover while other areas are completely bare. It appeared that the landfill cover/cap was composed primarily of fill material itself. It was readily apparent during the reconnaissance that run off has eroded some of the cover material. Leaching was occurring in a couple of random locations throughout the fill area. Mr. Aronson indicated that Mr. Wondaal, operator of the Fitz-Mar Landfill, left the site in this condition after a dispute with the City of Chicago Heights. The City of Chicago Heights has been unable to get a permit modification off the closure approved by the IEPA. The nearest residences are located roughly 500 feet west of the site.

2.2 GROUNDWATER SAMPLING

One groundwater sample was collected during the 1996 CERCLA STEP inspection. The

sample was obtained on site at the base of the fill area along the northern border of the site with the Geoprobe. The sample was collected at the relatively shallow depth of four feet. The intent was to collect shallow groundwater samples from various locations on the border of the fill area. The samplers were unable to locate groundwater at various probe points in and around the fill area. Also, at several locations the Toxic Vapor Analyzer (TVA) indicated elevated levels of what was believed to be methane. The elevated TVA levels were such that safety became a factor at which time these probe locations were abandoned.

Refer to the map at the end of the narrative section for sample locations. Temperature, pH, and specific conductivity were taken before collecting the sample. The required preservatives were added to the bottles after the sample was obtained. The sample containers were packaged and sealed in accordance with previously established Site Assessment Program methods and procedures. The sample was analyzed for the Target Compound List by Contract Laboratory Program (CLP) laboratories assigned by the U.S. EPA (refer to Table 2).

2.3 SOIL SAMPLING

IEPA personnel collected four soil samples during the June 26 & 27, 1996, STEP inspection to determine if Target Compound List contaminants are present at the Fitz-Mar Landfill. The samples were collected with either the Geoprobe Macro Core or a stainless steel trowel. Refer to the map at the end of the narrative section for sample locations.

The soils were transferred from the sampling device directly into sample containers supplied

by the IEPA Bottling Center. The sample containers were packaged and sealed in accordance with previously documented Site Assessment Program methods and procedures. The samples were analyzed for the Target Compound List by CLP laboratories assigned by the U.S. EPA (refer to Table 3).

2.4 KEY SAMPLES

All of the samples, other than the background, were collected from the landfill property during the STEP investigation. X102, a sub-surface soil sample, was collected at a depth of approximately eight feet and revealed on calcium and magnesium at levels which CERCLA criteria for an observed release. Duplicate surficial soil samples, X103 & X104, were collected from the cover material which revealed semi-volatile, pesticide, polychlorinated biphenyl (PCB), and inorganic contaminants that meet the CERCLA criteria for an observed release. CERCLA removal action levels were not exceeded in any of the soil samples. Refer to Table 4 for the Key Soil Sample Summary.

The groundwater sample was obtained with the Geoprobe. There was no background sample to which the analytic results of G101 were compared. None of the contaminants exceed the established Removal Action Levels. A copy of the laboratory analysis for all the samples is provided in the second volume of this report.

SECTION 3

IDENTIFICATION OF SOURCES

3.1 LANDFILL

From 1971 until 1992 the City of Chicago Heights disposed of municipal waste in a 38.5 acre landfill located on site. This landfill was permitted by the IEPA for the disposal of municipal and non-hazardous waste. The total area of the landfill is reported to be 38.5 acres or 1,677,060 square feet. The total volume has not been estimated as it would be difficult to discern given the available file information.

During the 1996 STEP inspection duplicate soil samples X103 & X104 were collected from the fill material used to cover the landfill. The sample was collected in the location of a leachate seep which was identified visually during the STEP sampling event (refer to Appendix B). Analysis of these samples revealed PNA, pesticide, PCB, and inorganic contaminants that meet the CERCLA criteria for an observed release. Based upon these analytic results the landfill has been designated as the only source associated with this site.

SECTION 4

MIGRATION PATHWAYS

4.1 GROUNDWATER PATHWAY

According to the Illinois State Geological Survey Bulletin #34 the general geology of the area is covered by a mantle of glacial drift composed of clay, sand, gravel, and boulders ranging in thickness from 60 to 300 feet. The Niagran limestone is the underlying rock formation. The thickness of this formation varies from 100 to 450 feet. Nearly all of the public wells left in the Chicago area draw water from this aquifer. The Maquoketa shale underlies the Niagran limestone averaging 200 feet in thickness. Its compactness inhibits it from being a water bearing formation. The Maquoketa shale serves as an impervious barrier separating the upper water bearing units from the next formation, the Galena-Platteville limestone. The thickness of the Galena-Platteville ranges from 300 to 450 feet. The Galena-Platteville formation is underlain by the St. Peter sandstone. The St. Peter is the last noteworthy formation underlying the area. Its artesian waters were depleted to a great extent as it was used almost exclusively in early development of the region. The formation is as thin as 20 feet in some areas and as thick as 300 in others.

Within the four mile target distance limit the City of South Chicago Heights has four wells of which two are active and located within .5 miles of the site. These wells are approximately 500 feet in depth and provide water to 1,230 services or 3,703 people. The City of South Chicago Heights plans on switching to water supplied by the City of Chicago via surface water intakes located on Lake Michigan by the end of 1997.

The City of South Chicago Heights has reported volatile contamination problems in the past that could be attributed to this site. Laboratory analysis of samples collected from on site monitoring wells during the 1988 CERCLA investigation revealed volatile contamination. Similar contaminants have been observed during quarterly sampling of the South Chicago Heights Well #3 which is believed to be downgradient of the site. The depth of all of these wells is 100 feet or greater. This City of South Chicago Heights participates in the IEPA's Public Water Unit's water quality testing.

As explained earlier in this report shallow groundwater sample G101 was collected during the STEP sampling event. This sample was taken in order to help determine if the volatile contamination found in the South Chicago Heights public well could be attributed to the landfill. While no volatile contamination was revealed in the laboratory analysis, it is important to note that Dieldrin and Aroclor-1254 were detected in sample G101. Both of these contaminants were also found at levels that meet the CERCLA criteria for an observed release in the duplicate soil samples collected from the fill area.

4.2 SURFACE WATER PATHWAY

Topographic maps indicate that drainage of the site is towards the south via a perennial stream that originates on site. Approximately one mile downstream the pathway becomes intermittent. Three miles south of its origin the pathway drains into a roadside ditch from which the direction of flow became impossible to determine as the ditch was dry and heads both east and west.

According to U.S. Department of the Interior "National Wetlands Inventory" maps, the only wetlands along the pathway is a small area on site from which the stream originates. The site is located outside of any floodplain as designated by the Federal Management Agency Flood Insurance Map for the area. A review conducted by the Illinois Department of Natural Resources did not reveal any sensitive environments along the surface water pathway.

4.3 AIR PATHWAY

Air samples were not collected during the STEP inspection nor have any been collected in the past. The IEPA file contains landfill inspection reports that indicate inadequate daily cover on a regular basis. Landfill inspectors also reported complaints from area residents of odors emanating from the landfill. There was no file information that would indicate incineration was ever employed as a disposal method at the landfill. Given the fact that a proper final cover has never been applied, the potential for airborne particulate matter to migrate off site does exist.

There are no residences, schools, or day care facilities within 200 feet of the site. There is a

Table 4-1
Estimated Air Target Populations

On a source	0
0 to 1/4 mile	150
>1/4 to ½ mile	1,500
>½ to 1 mile	3,000
>1 to 2 miles	24,590
>2 to 3 miles	28,590
>3 to 4 miles	28,780

densely populated residential area located roughly 500 feet west of the landfill. According to U.S. Department of the Interior "National Wetlands Inventory" maps, there is a small wetland area on site with approximately another five acres within a one mile radius.

4.4 SOIL EXPOSURE PATHWAY

Analysis of samples X103 & X104 collected from the cover/fill material during the 1996 CERCLA STEP inspection indicate the presence of semi-volatiles, PCBs, and inorganics. Some of these contaminants meet the CERCLA criteria for an observed release (refer to Table 4). Neighboring properties were not sampled during the 1996 inspection.

As stated in the air pathway section there are no residences, schools, or day care facilities within 200 feet of the site. There is a densely populated residential area approximately 500

Table 4-2
Estimated Soil Target Populations

On a source	0
>0 to 1/4 mile	150
>1/4 to ½ mile	1,500
>½ to 1 mile	3,000

feet west of the site. A review conducted by the Illinois Department of Natural Resources revealed no threatened or endangered species within a one mile radius of the site. According to U.S. Department of the Interior "National Wetlands Inventory" maps, there is a small wetland area on site. Access to the site is partially restricted by a fence with a locked gate. The only evidence of recreational use were spent firearm cartridges left from the City of Chicago Heights police department which uses the property for target practice on occasion.

SECTION 5

ADDITIONAL RISK BASED OBJECTIVES

This section addresses additional screening objectives used to evaluate the Fitz-Mar Landfill. These objectives were not used in assessing this site for HRS purposes.

5.1 TIERED APPROACH TO CORRECTIVE ACTION OBJECTIVES (TACO)

The Illinois EPA's TACO guidance document (proposed rules under 35 IL Adm. Code Part 742), can be used to develop site specific remediation objectives. This document discussed key elements required to develop risk-based remediation objectives, how background values may be used, and provides guidance through three tiers of the risk-based approach. The Illinois EPA will use this guidance, and the groundwater standards established in 36 IL Adm. Code 620, to determine soil and groundwater remediation objectives.

5.1.1 TACO Groundwater Objectives

After reviewing the geology, groundwater usage of the area, and *Groundwater Quality Standards,* groundwater beneath this site can be classified as Class II groundwater. This decision was based upon the following: no potable water supply wells are within the minimum setback zone, no unconsolidated sand, gravel, or sand/gravel deposits greater than 15 feet exist, and the majority of groundwater in the area is supplied by Lake Michigan. The groundwater remediation objectives are compared to Class II groundwater standards in 35 IL Adm. Code Part 620 or the groundwater objectives found in Illinois EPA's TACO document. The following table lists those contaminants which exceed Class II groundwater cleanup

objectives.

Table 5-1

Contaminant	Concentration		Class II Cleanup Objective	
Aroclor-1254	1.4	ppb	.0025	mg/L
Iron	5660.0	ppb	5.0	mg/L

SECTION 6

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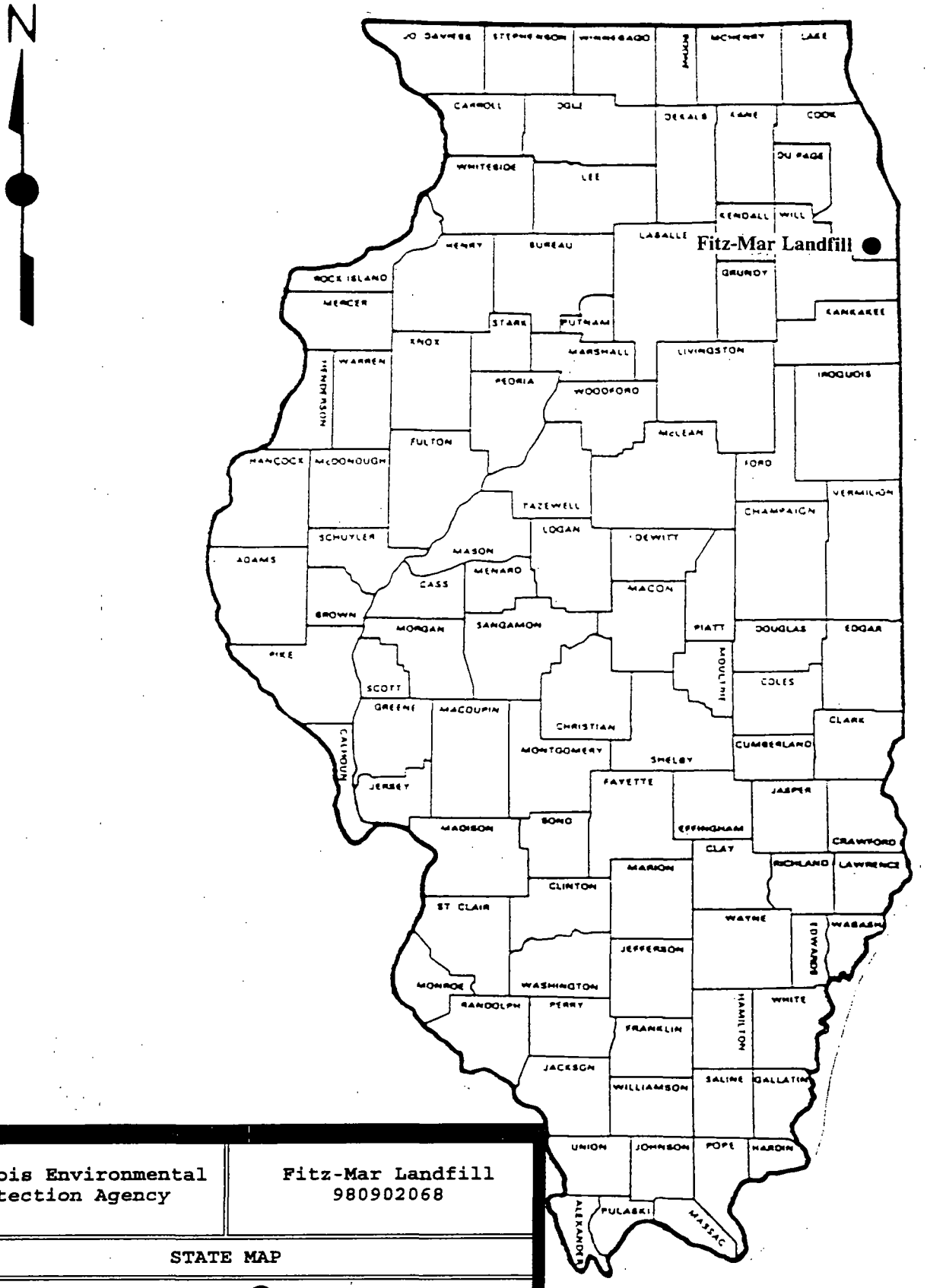
United States Geological Survey, 1973, Dyer, Illinois, 7.5 Minute Topographic Map.

United States Geological Survey, 1973, Steger, Illinois, 7.5 Minute Topographic Map.



Illinois Environmental Protection Agency	Fitz-Mar Landfill 980902068
STATE MAP	
Site: ●	

Highlands
Cherry Hill Country Club
Homewood-Flossmoor High Sch
Flossmoor Sch
Western Ave Jr High Sch
Flossmoor Park
Townhall
Flossmoor
Cypress Park
Sunny Crest
Radio Tower
Highland Park
Irons Oak Park
Flossmoor Country Club
Pheasant Trails Park
Bethel Ch
St Paul Cem
Water Tank
Idlewild Country Club
Sewage Disposal
Gaging Station
Butterfield
Park
Churchill Sch
St Andrews Ch
Fire Sta
Serena Hills Sch
Normandy Villa Sch
St Kieran Sch
Olympia Fields Hospital
Rich Central High Sch
Bicentennial Park
Olympia Fields Country Club
Water Tank
Olympia Fields
Tolentine College
Tolenting Park
Arcadie Sch
Townhall
Water Tank
Meidell Park
Greenbrian Sch
Prairie State College
Marian High Sch
Highlands Sch
Bloom High Sch
St Pauls Sch
Kennedy Sch
Bloom Community College
Chicago Heights Country Club
Golf Course
Temple Anshe Sholom
Maynegaite Park
Sgt Means Park
Water Tank
Elliot Cem
Sewage Disposal
Memorial Park
Huth Sch
Lawrence O'Toole Sch
PARK FOREST
Indiana Sch
Illinois Sch
Thomas Pk
Olympia Fields
Waterworks
Matteson
Richton Park
Lakewood Sch
Rich High Sch
St Irenaeus Sch
Mohawk Sch
Waterworks
Sauk Trail Sch
Blackhawk Sch
Camp Pompeii
Sewage Disposal
Water Tank
Dogwood Sch
Smith Memorial Park
Roosevelt Sch
Wilson Woods
St James Hospital
St Agnes Sch
Washington-McKinley Jr High Sch
St John Chs
Indian Hill
CO FOREST PRESERVE
CHICAGO HEIGHTS
St Anne Sch
Harsted Woods
Jefferson Sch
Grant Sch
Central Sch
South Chicago Heights
Evergreen Hill Cem
Calvary Cem
COOK CO
WILL CO

4 Miles

3 Miles

2 Miles

1 Mile

1/2 Mile

1/4 Mile

Fitz-Mar Landfill

Glenwood
Brookwood Jr High Sch
Brookwood Sch
GLENWOOD
LANSING
ROAD
Gaging Sta
Sunnybrook Sch
Glenwoodie Country Club
GLENWOOD-DYER INTERCHANGE
ASSUMPTION CEMETERY
BALTIMORE
AVE
Deer Creek
B L O O M
PIPELINE
CALUMET
ISLAND
STONY
Substation
Water Tank
ORR
Gaging Sta
Sewage Disposal
Radio Towers (WCGO)
GROVE
COTTAGE
Third Creek
CHICAGO HEIGHTS
EAST CHICAGO HEIGHTS
Franklin Sch
St Casimirs Sch
St Josephs Sch
Fire Sta
Village Hall
Woodlawn Sch
Cottage Grove Sch
Substation
Seifert Park
Water Tank
Radio Tower
LINCOLN HY-CHICAGO HTS INTERCHANGE
SANDPITS
Sandridge Sch
East Chicago Heights
Borrow Pit
PENN
CENTRAL
JOLIET
AND
EASTERN
ELGIN
Mt Carmel Sch
Cynthia Street
Lakewood Country Club
Sauk Village
St James Cem
Fire Station
Strassburg Sch
St James Sch
Fitz-Mar Landfill
Sauk Trail Sch
Substation
South Chicago Heights
Sewage Disposal
Steger
COOK CO
WILL CO
Golf Course
CORPORATE BOUNDARY
Lincolnshire Country Club
Deer Lake
RICHTON
ROAD
CRETE
Deer Creek
Sewage

Tolentine College
Olympia Fields Country Club
Olympia Fields
Tolenting Park
Arcadia Sch
Water Tank
Townhall
Bicentennial Park
Sgt Means Park
Temple Anshe Sholom
Golf Course
Maynegaite Park
Water Tank
Elliott Cem
Sewage Disposal
Memorial Park
Huth Sch
Lawrence-O'Toole Sch
PARK FOREST
Indiana Sch
Park
Illinois Sch
Thomas Pk
Olympia Fields
BM 704
BM 701
BM 702
Matteson
Waterworks
Richton Park
Lakewood Sch
PARK FOREST
Rich High Sch
St Irenaeus Sch
Mohawk Sch
Waterworks
Sauk Trail Sch
Blackhawk Sch
Camp Pompeii
Sewage Disposal
Water Tank
Thorn Grove Sch
Landing Field
Marian High Sch
Fire Sta
Highlands Sch
Bloom High Sch
St Pauls Sch
Kennedy Sch
Chicago Heights Country Club
Bloom Community College
CHICAGO HEIGHTS
Park
Halsted Woods
Roosevelt Sch
Wilson Woods
Smith Memorial Park
St James Hospital
St Agnes Sch
Washington-McKinley Jr High Sch
Indian Hill
St John Ch
CO FOREST PRESERVE
CHICAGO HEIGHTS
St Anne Sch
Grant S
Dogwood Sch
South Chicago Heights
Drive-In Theater
Central Sch
Calvary Cem
COOK CO
WILL CO
Evergreen Hill Cem
Schrage Sch
Adams Cem
N E E
C R E T E

2 Miles

1 Mile

1/2 Mile

1/4 Mile

Fitz-Mar Landfill

CHICAGO HEIGHTS

EAST CHICAGO HEIGHTS

South Chicago Heights

Steger

Crete

Faithorn

East Chicago Heights

COOK CO

WILL CO

ILLINOIS EN
PROTECTIO

USG

NAME: Harvey, IL
LOCATION: 55C
PHOTOREVISED: 19

NAME: Steger, IL
LOCATION: 56B
PHOTOREVISED: 19

0

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY	Fitz-Mar Landfill 980902068

USGS TOPOGRAPHIC MAPS

NAME: Harvey, IL LOCATION: 55C PHOTOREVISED: 1993	NAME: Calumet City, IL LOCATION: 55D PHOTOREVISED: 1980
NAME: Steger, IL LOCATION: 56B PHOTOREVISED: 1973	NAME: Dyer, IL LOCATION: 56A PHOTOREVISED: 1973

LEGEND

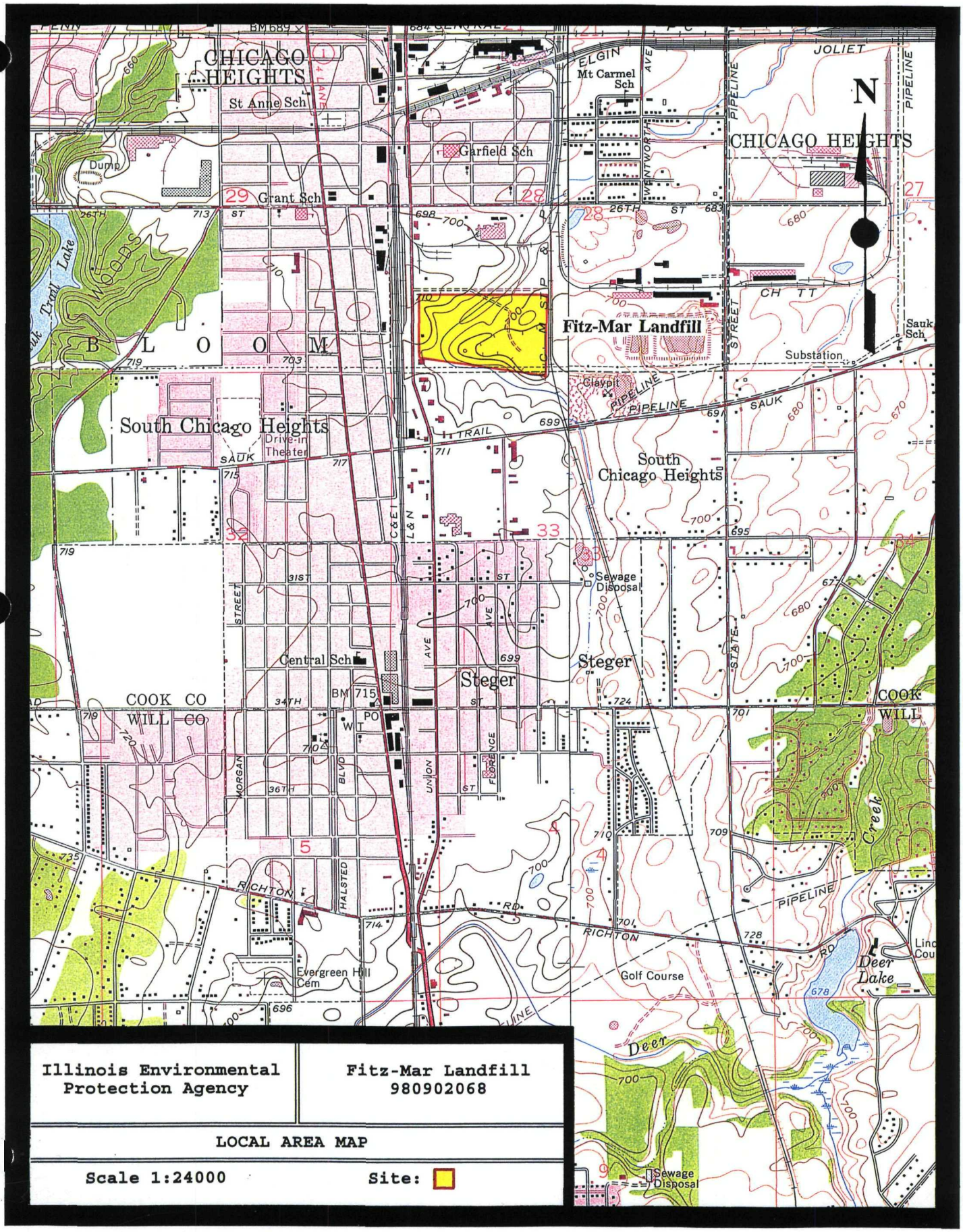
- PUBLIC WELLS
- SITE LOCATION

SCALE

0 ½ 1 MILE

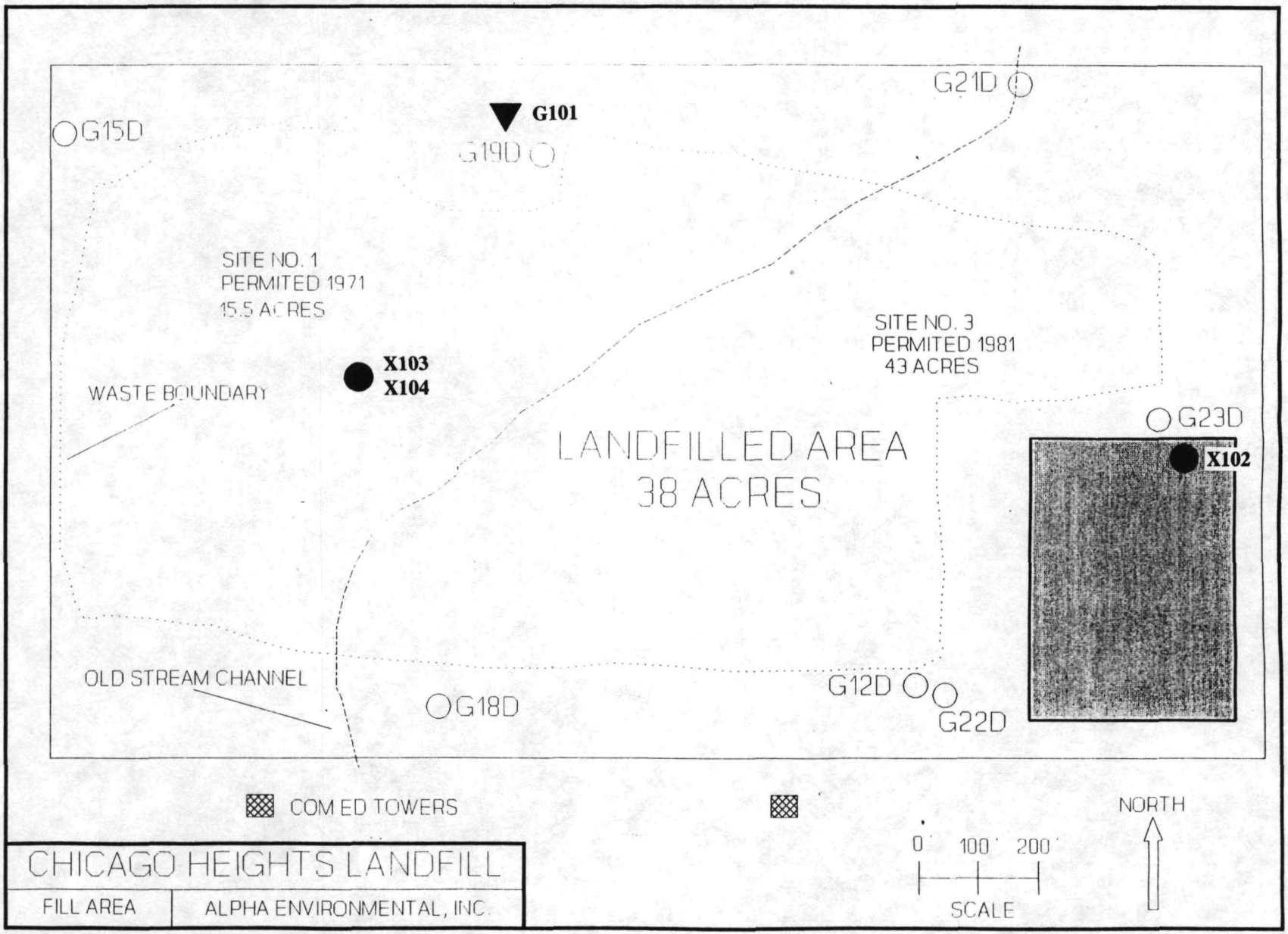
ILLINOIS

QUADRANGLE LOCATION

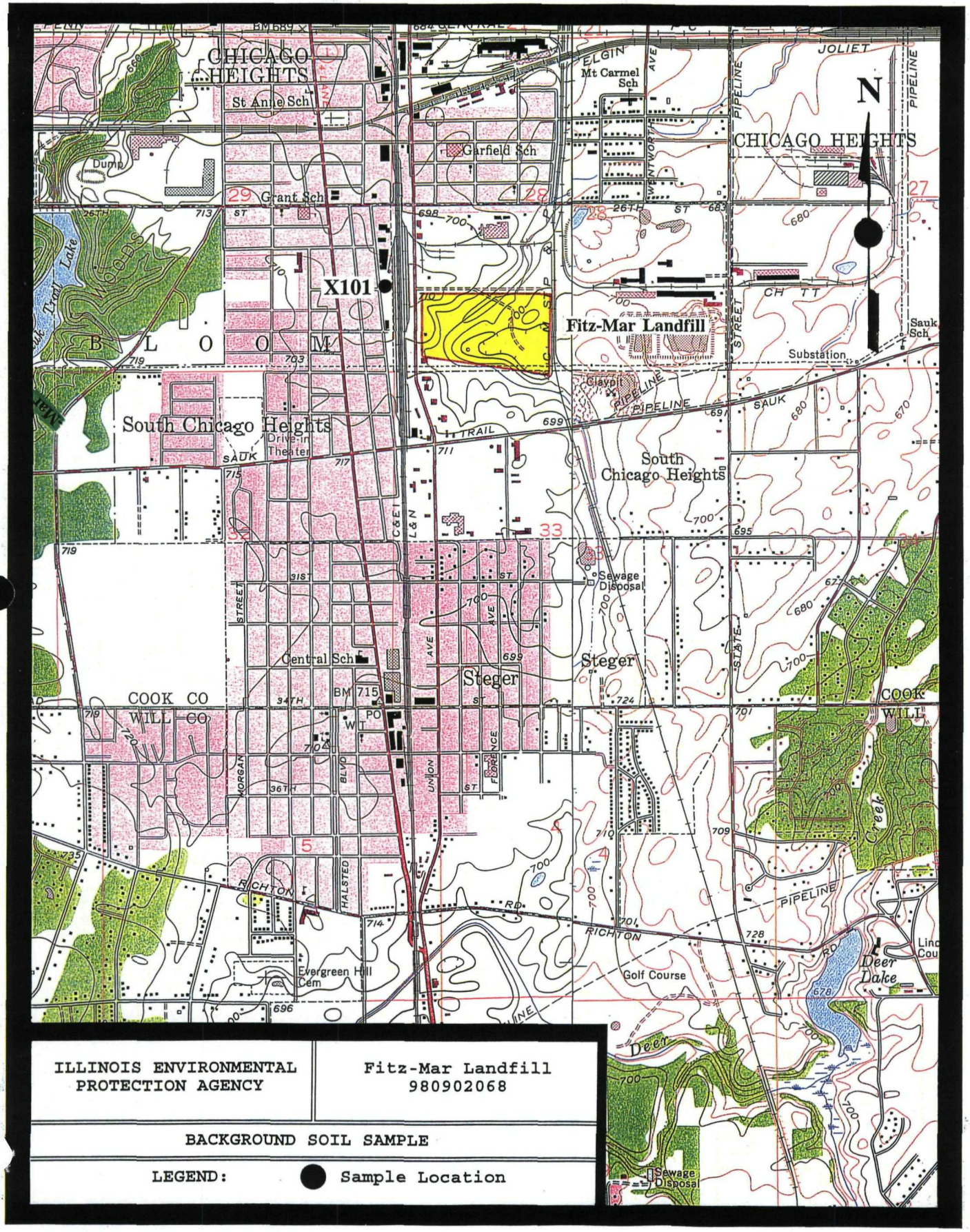


Illinois Environmental Protection Agency	Fitz-Mar Landfill 980902068
LOCAL AREA MAP	
Scale 1:24000	Site:

ON-SITE SAMPLES



Base map courtesy of Alpha Environmental



ILLINOIS ENVIRONMENTAL PROTECTION AGENCY	Fitz-Mar Landfill 980902068
BACKGROUND SOIL SAMPLE	
LEGEND: ● Sample Location	

TABLE 1
SAMPLE DESCRIPTIONS

Sample	Depth	Appearance	Location
X101	2" - 4"	Dark brown loam.	Background soil sample collected 11' north and 90' east of the southeast corner of the playground at the public park due west of the site.
X102	8' - 12'	Light brown clay.	Sample point was 26' south of monitoring well G23D and 28' west of drainage ditch bordering the site to the east.
X103 X104	0" - 2"	Fill materials.	Collected from a leachate seep in the fill area 390' from the beginning of the access road which runs through the fill area.
G101	4'	Turbid with no odor.	10'6" south of access road along northern property boundary and 29'6" west of monitoring well G19D.

TABLE 2
GROUNDWATER SAMPLE SUMMARY

SAMPLING POINT	G101
PARAMETER	Groundwater
PESTICIDES (ppb)	
Endrin aldehyde	0.2
alpha-Chlordane	0.1
gamma-Chlordane	0.1 P
Aroclor-1254	1.4
INORGANICS (ppm)	
Aluminum	28.6 B
Antimony	3.1 B
Arsenic	10.8
Barium	321.0
Calcium	139000.0
Chromium	38.4
Cobalt	2.1 B
Copper	4.4 B
Iron	5660.0
Lead	1.8 B
Magnesium	97200.0
Manganese	565.0
Nickel	12.1 B
Potassium	108000.0 B
Sodium	94200.0
Vanadium	2.0 B
Zinc	8.4 B
Cyanide	5.2 B

TABLE 3
SOIL SAMPLE SUMMARY

SAMPLING POINT / PARAMETER	X101 Background Soil	X102 Soil	X103 Soil	X104 Soil (Duplicate)
VOLATILES (ppb)				
Chloroform	11.0 U	--	2.0 J	--
SEMIVOLATILES (ppb)				
Acenaphthene	420.0 U	--	37.0 J	--
Dibenzofuran	420.0 U	--	37.0 J	--
Fluorene	420.0 U	--	44.0 J	36.0 J
Phenanthrene	420.0 U	--	310.0 J	420.0 J
Carbazole	420.0 U	--	64.0 J	--
Fluoranthene	420.0 U	--	710.0	910.0
Pyrene	420.0 U	--	1200.0	1800.0
Benzo(a)Anthracene	420.0 U	--	230.0 J	340.0 J
Chrysene	420.0 U	--	350.0 J	510.0 J
bis(2-Ethylhexyl)Phthalate	190.0 J	--	440.0 J	1100.0
Di-n-Octyl Phthalate	420.0 U	--	760.0	--
PESTICIDES (ppb)				
Dieldrin	4.2 U	--	--	7.6 P
4,4'-DDE	910.0 PE		12.0 P	12.0
4,4'-DDD	7.0 P	--	7.2 P	--
Endrin aldehyde	6.1 P	--	--	25.0 P
gamma-Chlordane	2.3 P	--	5.3 P	5.2
Aroclor-1254	42.0 U	--	280.0 P	320.0
INORGANICS (ppm)				
Aluminum	10200.0	6370.0	5160.0	4270.0
Arsenic	10.9	10.4	9.4	10.0
Barium	93.1	28.6 B	152.0	144.0
Beryllium	0.8 B	0.5 B	0.5 B	--
Cadmium	0.4 B	0.3 B	0.6 B	0.8 B
Calcium	6690.0	49000.0	172000.0	83500.0
Chromium	16.0	12.4	24.8	21.8
Cobalt	10.2 B	10.6 B	5.9 B	5.0 B
Copper	23.6	29.0	46.8	47.7
Iron	21300.0	20200.0	15900.0	13900.0
Lead	50.8	16.7	92.3	71.8
Magnesium	4080.0	27200.0	74800.0	16900.0
Manganese	505.0	395.0	626.0	507.0
Nickel	19.6	27.9	19.6 B	17.8 B
Potassium	1100.0 B	1700.0	1230.0 B	959.0 B
Silver	0.3 U	--	3.2 B	3.4 B
Sodium	210.0 B	301.0 B	904.0 B	908.0 B
Vanadium	24.6	15.6	16.7 B	13.6 B
Zinc	86.7	63.7	180.0	190.0
Cyanide	0.3 B	--	0.7 B	--

TABLE 4
KEY SOIL SAMPLES

SAMPLING POINT	X101	X102	X103	X104
PARAMETER	Background Soil	Soil	Soil	Soil (Duplicate)
SEMIVOLATILES (ppb)				
Fluoranthene	420.0 U	--	710.0	910.0
Pyrene	420.0 U	--	1200.0	1800.0
bis(2-Ethylhexyl)Phthalate	190.0 J	--	--	1100.0
Di-n-Octyl Phthalate	420.0 U	--	760.0	--
PESTICIDES (ppb)				
Dieldrin	4.2 U	--	--	7.6 P
Endrin aldehyde	6.1 P	--	--	25.0 P
Aroclor-1254	42.0 U	--	280.0 P	320.0
INORGANICS (ppm)				
Calcium	6690.0	49000.0	172000.0	83500.0
Magnesium	4080.0	27200.0	74800.0	16900.0
Silver	0.3 U	--	3.2 B	3.4 B
Sodium	210.0 B	--	904.0 B	908.0 B

DATA QUALIFIERS

QUALIFIER	DEFINITION ORGANICS	DEFINITION INORGANICS
U	Compound was tested for but not detected. The sample quantitation limit must be corrected for dilution and for percent moisture. For soil samples subjected to GPC clean-up procedures, the CRQL is also multiplied by two, to account for the fact that only half of the extract is recovered.	Analyte was analyzed for but not detected.
J	Estimated value. Used when estimating a concentration for tentatively identified compounds (TICS) where a 1:1 response is assumed or when the mass spectral data indicate the presence of a compound that meets the identification criteria and the result is less than the sample quantitation limit but greater than zero. Used in data validation when the quality control data indicate that a value may not be accurate.	Estimated value. Used in data validation when the quality control data indicate that a value may not be accurate.
C	This flag applies to pesticide results where the identification is confirmed by GC/MS.	Method qualifier indicates analysis by the Manual Spectrophotometric method.
B	Analyte was found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action.	The reported value is less than the CRDL but greater than the instrument detection limit (IDL).
D	Identifies all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is re-analyzed at a higher dilution factor as in the "E" flag, the "DL" suffix is appended to the sample number on the Form I for the diluted sample, and all concentration values are flagged with the "D" flag.	Not used.
E	Identifies compounds whose concentrations exceed the calibration range for that specific analysis. All extracts containing compounds exceeding the calibration range must be diluted and analyzed again. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses must be reported on separate Forms I. The Form I for the diluted sample must have the "DL" suffix appended to the sample number.	The reported value is estimated because of the presence of interference.
A	This flag indicates that a TIC is a suspected aldol concentration product formed by the reaction of the solvents used to process the sample in the laboratory.	Method qualifier indicates analysis by Flame Atomic Absorption (AA).
M	Not used.	Duplicate injection (a QC parameter not met).

N	Not used	Spiked sample (a QC parameter not met).
S	Not used.	The reported value was determined by the Method of Standard Additions (MSA).
W	Not used.	Post digestion spike for Furnace AA analysis (a QC parameter) is out of control limits of 85% to 115% recovery, while sample absorbance is less than 50% of spike absorbance.
*	Not used.	Duplicate analysis (a QC parameter not within control limits).
+	Not used.	Correlation coefficient for MSA (a QC parameter) is less than 0.995.
P	Not used.	Method qualifier indicates analysis by ICP (Inductively Coupled Plasma) Spectroscopy.
CV	Not used.	Method qualifier indicates analysis by Cold Vapor AA.
AV	Not used.	Method qualifier indicates analysis by Automated Cold Vapor AA.
AS	Not used.	Method qualifier indicates analysis by Semi-Automated Cold Spectrophotometry.
T	Not used.	Method qualifier indicates Titrimetric analysis.
NR	The analyte was not required to be analyzed.	The analyte was not required to be analyzed.
R	Rejected data. The QC parameters indicate that the data is not usable for any purpose.	Rejected data. The QC parameters indicate that the data is not usable for any purpose.

APPENDIX A
4 MILE RADIUS MAP

APPENDIX B
TARGET COMPOUND LIST

TARGET COMPOUND LIST

Volatile Target Compounds

Chloromethane
Bromomethane
Vinyl Chloride
Chloroethane
Methylene·Chloride
Acetone
Carbon Disulfide
1,1-Dichloroethene
1,1-Dichloroethane
1,2-Dichloroethene (total)
Chloroform
1,2-Dichloroethane
2-Butanone
1,1,1-Trichloroethane
Carbon Tetrachloride
Bromodichloromethane
1,2-Dichloropropane
cis-1,3-Dichloropropene
Trichloroethene
Dibromochloromethane
1,1,2-Trichloroethane
Benzene
trans-1,3-Dichloropropene
Bromoform
4-Methyl-2-pentanone
2-Hexanone
Tetrachloroehtene
1,1,2,2-Tetrachloroethane
Toluene
Chlorobenzene
Ethylbenzene
Styrene
Xylene (total)

Base/Neutral Target Compounds

Hexachloroethane
bis(2-Chloroethyl)ether
N-Nitroso-Di-n-Propylamine
Nitrobenzene
Hexachlorobutadiene
2-Methylnaphthalene
1,2,4-Trichlorobenzene
Isophorone
Naphthalene
4-Chloroaniline
bis(2-Chloroethoxy)methane
Hexachlorocyclopentadine
2-Chloronaphthalene
2-Nitroaniline
Acenaphthylene
Dibenzofuran
Dimethylphthalate
2,6-Dintrotoluene
N-Nitrosodiphenylamine(1)
Hexachlorobenzene
Phenanthrene
4-Bromophenyl-phenylether
Anthracene
Di-n-Butylphthalate
Fluoranthene
Pyrene
Butylbenzylphthalate
bis(2-Ethylhexyl)phthalate
Chrysene
Benzo(a)anthracene
3,3'-Dichlorobenzidine
Di-n-Octylphthalate
Benzo(b)fluoranthene
Benzo(k)fluoranthene
Benzo(a)pyrene
Indeno(1,2,3-cd)pyrene

Fluorene	Dibenz(a,h)anthracene
4-Nitrolaniline	Benzo(g,h,i)perylene
4-Chlorophenyl-phenylether	1,2-Dichlorobenzene
2,4-Dinitrotoluene	1,3-Dichlorobenzene
Diethylphthalate	1,4-Dichlorobenzene

Acid Target Compounds

Phenol	2,4,6-Trichlorophenol
2-Chlorophenol	2,4,5-Trichlorophenol
2-Nitrophenol	4-Chloro-3-Methylphenol
2-Methylphenol	2,4-Dinitrophenol
2,4-Dimethylphenol	4,6-Dinitro-2-methylphenol
4-Methylnaphthalene	Pentachlorophenol
2,4-Dichlorophenol	4-Nitrophenol

Pesticide/PCB Target Compounds

alpha-BHC	4,4'-DDT
beta-BHC	Methoxychlor
delta-BHC	Endrin ketone
gamma-BHC (Lindane)	Endrin aldehyde
Heptachlor	alpha-Chlrodane
Aldrin	gamma-Chlrodane
Heptachlor epoxide	Toxaphene
Endosulfan I	Aroclor-1016
Dieldrin	Aroclor-1221
4,4'-DDE	Aroclor-1232
Endrin	Aroclor-1242
Endosulfan II	Aroclor-1248
4,4'-DDD	Aroclor-1254
Endosulfan Sulfate	Aroclor-1260

Inorganic Target Compounds

Aluminum	Manganese
Antimony	Mercury
Arsenic	Nickel
Barium	Potassium
Beryllium	Selenium
Cadmium	Silver
Calcium	Sodium

Chromium
Cobalt
Copper
Iron
Lead
Magnesium
Thallium
Vanadium
Zinc
Cyanide
Sulfide
Sulfate

APPENDIX C
STEP SITE PHOTOGRAPHS

DATE: June 26, 1996

TIME: 2:15 PM

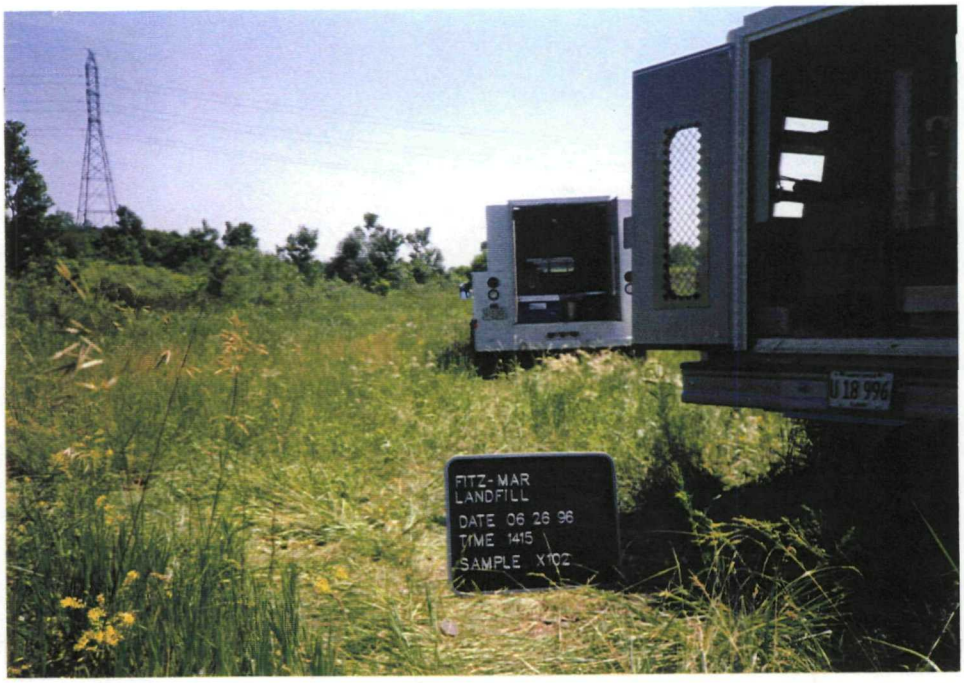
PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 1

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
South

Deep soil sample X102 taken from along the eastern boundary of the fill area.



DATE: June 26, 1996

TIME: 2:15 PM

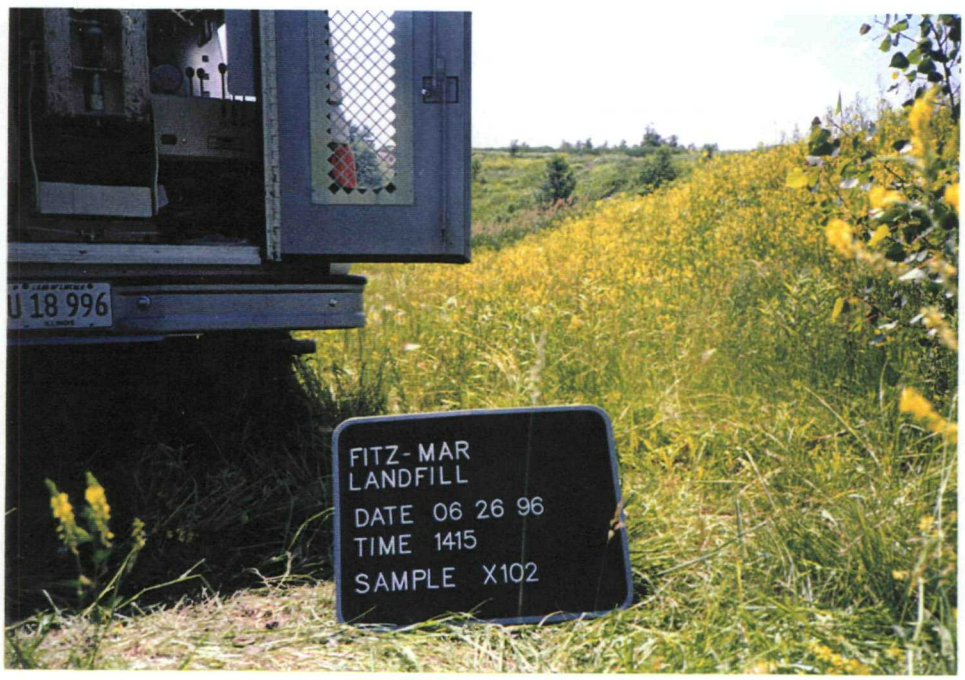
PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 2

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
West

Close up of deep soil sample X102 which was collected using the Geoprobe.



DATE: June 26, 1996

TIME: 4:30 PM

PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 3

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
South

Groundwater sample G101 collected along the northern edge of the fill area.

DATE: June 26, 1996

TIME: 4:30 PM

PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 4

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
West

Close up of groundwater sample G101 which was obtained with the Geoprobe.

DATE: June 27, 1996

TIME: 10:45 AM

PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 5

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
North

Duplicate soil samples X103 & X104. These samples were collected near the source of a leachate seep on top of the filled area.

DATE: June 27, 1996

TIME: 10:45 AM

PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 6

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
West

Close up of duplicate soil samples X103 and X104.

DATE: June 27, 1996

TIME: 10:45 AM

PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 7

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
East

Photo showing the extent of the leachate seep from which soil samples X103 & X104 were taken.

DATE: June 27, 1996

TIME: 10:45 AM

PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 8

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
South

Same leachate seep as in photo #7.

DATE: June 27, 1996

TIME: 11:45 AM

PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 9

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
East

Background soil sample X101. The mounded area in the background is Fitz-Mar Landfill.

DATE: June 27, 1996

TIME: 11:45 AM

PHOTOGRAPH TAKEN BY:
Mark Weber

PHOTO NUMBER: 10

LOCATION: L0310450011
Cook County
Fitz-Mar Landfill
ILD 980902068

PHOTO TAKEN TOWARD:
South

Close up of background soil sample X101.